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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/021,079	12/19/2001	Takeshi Hoshida	1460.1033	8722

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EXAMINER	
TRAN, DZUNG D	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/021,079	HOSHIDA ET AL.	
	Examiner	Art Unit	
	Dzung D. Tran	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 August 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 25-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-19,22,25 and 30-35* is/are allowed.

6)☐ Claim(s) *20,21 and 26-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 20 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grubb et al. US patent no. 6,344,922.

Regarding claim 20, Grubb discloses in Figure 5b a method for supplying pump light used for Raman amplification in an optical transmission line, comprising:

a first step of supplying pump light having a first optical power to said optical transmission line (e.g., pump λ_{p1} supplying pump light having a first optical power to said optical transmission line);

a second step of detecting optical power of light Raman amplified by said pump light having said first optical power (e.g., controller 34 for detecting optical power of light Raman amplified by said pump light λ_{p1} having said first optical power);

a third step of supplying pump light having a second optical power to said optical transmission line (e.g., pump λ_{p2} supplying pump light having a second optical power to said optical transmission line);

a fourth step of detecting optical power of light Raman amplified by said pump light having said second optical power (e.g., controller 34 for detecting optical power of light Raman amplified by said pump light λ_{p2} having said second optical power); and a fifth step of giving a warning about abnormal occurring at a supplying destination of said pump light when a comparison result between detection results of the second step and the fourth step is within a predetermined ranged (e.g., a controller 34 of figure 5(b) centrally setting of the first and second wavelengths through communication lines to the first and second pump light sources, to reduce the gain tilt, wherein the controller controls the setting of the first and second wavelengths in a repeating , sequential order (col. 8, line 67 to col. 9, line 10). Grubb further discloses controller 34 for controlling the pump energy supplied via one or more of the pump wavelength (col. 6, lines 57-66) by detecting or receiving the pumps power and compare it with a desired intensity profile to the optical signal (col. 4, lines 10-17). The controller 34 also transmits supervisory and/or monitoring signal (equivalent to warning signal) to network manager 50 via λsc (col. 8, line 67 to col. 9, line 10).

Although Grubb does not specific discloses a second optical power larger than the first optical power or the first optical power being lower than a power level of normal operation for Raman amplifier or the second optical power being higher than a power level of normal operation for Raman amplifier. However, whether to set a second

optical power larger than the first optical power or to set a first optical power larger than the second optical power or the first optical power being lower than a power level of normal operation for Raman amplifier or the second optical power being higher than a power level of normal operation for Raman amplifier is merely an engineering design choices.

Therefore, it would have been obvious to a person of ordinary skill in the art to set a second optical power larger than the first optical power in order to equalize the power and provide a substantially flat gain over wavelengths of the optical signal.

Regarding claim 26, Grubb further discloses in Figure 5a a plurality of pump light sources (32) located in a respective repeater station of a plurality of repeater stations (26) provided along an optical transmission line between transmitting station and receiving station.

Regarding claim 27, Grubb discloses a controller 34 for controlling the pump energy supplied via one or more of the pump wavelength (col. 6, lines 57-66) by detecting or receiving the pumps power and compare it with a desired intensity profile to the optical signal (col. 4, lines 10-17). The controller 34 also transmits supervisory and/or monitoring signal (equivalent to warning signal) to network manager 50 via λsc (col. 8, line 67 to col. 9, line 10).

Regarding claims 28 and 29, Grubb further discloses optical transmission line has a Raman gain as a function of wavelength in which an interval between a minimum value and a maximum value of a wavelength of said pump light coincides with a width of an amplifying wavelength band when a maximum value first appeared after a Raman

gain generated by pump light starts showing coincides with a center wavelength of the amplifying wavelength band to be amplified (col. 11, lines 14-46), wherein second wavelength is set so that a maximum value first appeared after a second Raman gain generated by said pump light with said second wavelength starts showing substantially coincides with a local minimum value first appeared after a first Raman gain generated by pump light with said first wavelength starts showing, on said first wavelength (col. 5, lines 7-19, col. 11, lines 14-20).

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grubb et al. US patent no. 6,344,922 in view of Wu US patent no. 6,423,963.

Regarding claim 21, as per claims above, Grubb discloses all the limitations except for stopping means for stopping supply of the pump light when warning is given. Wu discloses a method for shutting off pump radiation from the Raman pump to the fiber (col. 3, lines 13-16), Wu system include a supervisory receiver that provides the output to the decision block 104 for turning off the Raman pump in the event of a failure of supervisory channel source or a cut in fiber (col. 4, lines 51-60). Therefore, it would have been obvious to an artisan at the time of the invention was made to include the teaching of Wu in the system of Grubb. One of ordinary skill in the art would have been motivated to do this for reducing power consumption of Raman pump source and for safety mechanism of Raman pump source. Furthermore, it prolongs the life of the pump.

4. Claims 1-19, 22, 25 and 30-35 are allowed.

Response to Arguments

5. Applicant's arguments filed on 02/23/2006 have been fully considered but they are not persuasive.

A Rejection of claims 20 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grubb et al. US patent no. 6,344,922.

Applicant argues that Grubb reference does not discloses or suggest "supplying and detecting different pump light at different optical powers and giving a warning when a comparision result between detection results is within a predetermined range".

However Grubb discloses in Figure 5b a first step of supplying pump light having a first optical power to said optical transmission line (e.g., pump λ_{p1} supplying pump light having a first optical power to said optical transmission line);

a second step of detecting optical power of light Raman amplified by said pump light having said first optical power (e.g., controller 34 for detecting optical power of light Raman amplified by said pump light λ_{p1} having said first optical power);

a third step of supplying pump light having a second optical power to said optical transmission line (e.g., pump λ_{p2} supplying pump light having a second optical power to said optical transmission line);

a fourth step of detecting optical power of light Raman amplified by said pump light having said second optical power (e.g., controller 34 for detecting optical power of light Raman amplified by said pump light λ_{p2} having said second optical power); and a fifth step of giving a warning about abnormal occurring at a supplying destination of said pump light when a comparison result between detection results of the second step and the fourth step is within a predetermined ranged (e.g., a controller 34 of figure 5(b) centrally setting of the first and second wavelengths through communication lines to the first and second pump light sources, to reduce the gain tilt, wherein the controller controls the setting of the first and second wavelengths in a repeating , sequential order (col. 8, line 67 to col. 9, line 10). Grubb further discloses controller 34 for controlling the pump energy supplied via one or more of the pump wavelength (col. 6, lines 57-66) by detecting or receiving the pumps power and compare it with a desired intensity profile to the optical signal (col. 4, lines 10-17). The controller 34 also transmits supervisory and/or monitoring signal (equivalent to warning signal) to network manager 50 via λsc (col. 8, line 67 to col. 9, line 10).

Although Grubb does not specific discloses a second optical power larger than the first optical power or the first optical power being lower than a power level of normal operation for Raman amplifier or the second optical power being higher than a power level of normal operation for Raman amplifier. However, whether to set a second optical power larger than the first optical power or to set a first optical power larger than the second optical power or the first optical power being lower than a power level of normal operation for Raman amplifier or the second optical power being higher than a

power level of normal operation for Raman amplifier is merely an engineering design choices.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dzung D Tran whose telephone number is (571) 272-3025. The examiner can normally be reached on 9:00 AM - 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dzung Tran
11/05/2006

Dzung Tran

DZUNG TRAN
PRIMARY PATENT EXAMINER